Chronic Bacillus Carriers after Typhoid Fever.—Lentz (*Klin. Jahrbuch*, 1905, vol. xiv. p. 475) finds that after typhoid fever the patient may harbor the typhoid bacillus for a long time. Patients from whom the organism can be isolated ten weeks after the onset of the attack of typhoid fever, or of a relapse, are considered by the author as bacillus carriers, "bacillenträger." He collected ninety-eight such cases from seven sanitary stations in Germany, and thinks that about four per cent. of cases of typhoid fever become chronic bacillus carriers. In one case, the longest he found, the organism was isolated from the stools forty-two years after an attack of typhoid fever. In this case the organism was obtained over a period of a year and three-quarters, and twelve cases of typhoid fever could be traced to it as the source of infection.

The blood serum of these chronic bacillus carriers may or may not give an agglutination reaction. In some of these cases the typhoid bacillus may be found in the stools in almost pure culture, where it practically replaces the colon bacillus, and the organism so found agrees culturally toward animals and immune sera as do bacilli from well-defined cases of typhoid fever.

Kutscher (*Berliner klin. Woch.*, 1905, vol. xlii. p. 1620) emphasizes the importance of these cases of chronic bacillus carriers as sources of direct infection. He concludes from a review of the literature, and from his own experience, that the typhoid bacillus sometimes grows as a saprophyte in the intestine and that contact infection may play a much more important role than is usually supposed. Water and food infection is probably not so all-important as is generally held. Kutscher believes that the light and unrecognizable infections of typhoid fever are especially dangerous as sources of direct infection.

The work of Doerr (*Centr. f. Bakt. Orig.*, 1905, vol. xxxix. p. 624) on the development of the typhoid bacilli in the gall-bladder throws some light on the subject of these chronic bacillus carriers. His investigation was stimulated by the study of a case in which, from the centre of gallstones and from pus from the gall-bladder, pure cultures of typhoid bacilli were obtained. As this patient had passed gallstones at intervals over a length of time, the author concludes that typhoid bacilli must have been disseminated and the patient have been an unsuspected source of infection for a long time. This condition is believed to be a not uncommon one and must result when the typhoid bacilli become part of the harmless flora of the intestinal tract. In evidence that the bacillus may play this part, the author cites especially the cases of Droba and Hunner where, seventeen and twenty years respectively after typhoid fever, the organism was isolated from the gall-bladder.

The regularity with which the gall-bladder is invaded by the typhoid bacillus is well known, and Blachstein and Welch found that the gall-bladders of dogs contained the organism several months after intravenous inoculation, while the other organs were found to be sterile. The author repeated these experiments and found that in twenty-four hours after intravenous injections of moderate amounts of typhoid bacilli the gall-bladder contained the organism, while after feeding and intraperitoneal injections it was not found there. The gall-bladders of five control animals were sterile. He therefore concludes that the organism enters the gall-bladder exclusively through the blood stream. The author believes that in man, where it has been shown that even in very mild attacks of typhoid fever the organism enters the blood, the gall-bladder may become infected without recognizable attacks of typhoid fever. We may have, therefore, carriers of the infective agent, which are difficult to recognize, especially as it has been shown that the gall-bladder may harbor the typhoid bacillus while the blood serum fails to show any agglutinating properties toward the organism.

Doerr found that when the cystic duct was cut the bacilli did not enter the gall-bladder after intravenous injection, while they were found there in an experiment when the common bile duct was cut before the injection. These experiments led him to agree with Beidl and Kraus, Fütterer and others, that the bacilli enter the bile in the liver and so reach the gall-bladder. That the invasion of the gall-bladder may occur very soon after the organism becomes present in the blood, the author showed by intravenous inoculation of a series of six dogs which were killed at intervals of every two hours. In eight hours after the inoculation the bacilli were found in the gall-bladder. It was recovered from the blood of all of the series but was obtained from the urine in none.

Another series of ten dogs were intravenously inoculated with typhoid bacilli and were killed at intervals of from four days to four months. The gall-bladder contained the organism in all cases except one, killed on the one-hundredth day, while the liver, blood and other organs were sterile after fourteen days. A catarrhal cholecystitis was present in all but two dogs, one of which had a sterile gall-bladder. In one dog killed on the fortieth day a gallstone was found.

The presence of some immune bodies has been shown in bile infected by typhoid bacilli, and the author agrees with Cushing's idea that clumped organisms which become encrusted by mucus and pus may form the centres of gallstones.

From the fact that the other organs became sterile in fourteen days in his series, the author argues that the gall-bladder forms the seat of growth and not a depot for new invasions of the organism from another part.

The emptying and refilling of the gall-bladder furnishes the organisms with new culture media, and the author has found bile, pure or mixed with agar or bouillon, especially favorable to the growth of the bacillus, and forms a medium upon which this organism will remain alive a long time.

It was found that B. coli communis and β types of B. paratyphosus also entered the gall-bladder after intravenous injection, but the Flexner type of B. dysenteriæ was not recovered from the gall-bladder under these conditions.

No drug was found which seemed to have any effect upon clearing the gall-bladder of its bacterial contents. The author therefore emphasizes the importance of bacteriological examination of the stools of persons who have suffered from typhoid fever, and of the thorough disinfection of feces.

The Action of Fluorescent Substances on Toxins.—Jodlbauer and Tappeiner (*Deut. Arch. f. klin. Med.*, 1905, Bd. 85, p. 299), continuing their work upon the photodynamic substances, give the results of some experiments upon the combined action of light and eosin, fluorescein, sodium dichloranthracendisulphate, methylene blue, etc., on ricin, crotin, and diphtheria and tetanus toxin.